

by which the head 4 can be lifted to the upper positioning 19. Also, it is preferable that the energized force of the spring member 16, in the condition of equalizing the pressure of the cylinder 15 to zero, is designed to be the force by which the head 4 is hold between the lower positioning 18 and upper positioning 19. Moreover, the energized force of the spring member 16, in the condition of equalizing the pressure of the cylinder 15 to zero, may be designed to be the force by which the head 4 remains on the lower positioning 18. But, in this case, the force by which the head 4 is pressurized to the lower positioning 18 may be reduced under 1Kgf by the energized force making the spring member 16 return upward. If the force by which the head 4 is pressurized to the lower positioning 18 is in excess of 1Kgf in spite of being reduced by the energized force of the spring member 16, the balls 2 stick to the suction holes 25 provided at the head bottom 5. Therefore, the balls 2 are not transferred completely onto the workpiece 12, some of the balls instead remaining stuck to the head.

At page 13, lines 10-20.

Fig. 8 schematically shows a process of mounting the balls 2 onto the electrodes 29 provided on the workpiece 12 after the balls 2 are dipped into the layer filled with the flux 27 and the flux 27 is applied to the balls 2. Fig. 8(A) shows a state in which the head 4 is moved above the opening filled with the flux 27 which is formed to the thickness corresponding to the amount which should be applied to the ball 2. Fig. 8(B) shows a state in which the balls 2 sucked up to the head 4 counterbalanced the self-weight are lowered to a bottom of the flux layer. Fig. 8(C) shows a state in which the head 4 is raised after the flux 27 is applied to the balls 2. Fig. 8(D) shows a state in which the head 4 is moved above the workpiece 12. Fig. 8(E) shows a state in which the head 4 is lowered more after the head 4 counterbalanced by the self-weight is lowered, contacting the flux 27 with the pads 29. Fig. 8(F) shows a state in which the balls 2 applied with the flux 27 are mounted onto the electrodes 29 provided on the workpiece 12.